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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/994,122	11/26/2001	Siegfried Bocione	P01,0429	7331

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SCHIFF HARDIN, LLP  
PATENT DEPARTMENT  
6600 SEARS TOWER  
CHICAGO, IL 60606-6473

EXAMINER
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BULLOCK JR, LEWIS ALEXANDER

ART UNIT	PAPER NUMBER
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2195

DATE MAILED: 01/18/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/994,122

Applicant(s)

BOCIONEK, SIEGFRIED

Examiner

Lewis A. Bullock, Jr.

Art Unit

2195

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 12 October 2005.  
2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.  
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-6 is/are pending in the application.  
4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.  
5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.  
6) ☒ Claim(s) 1-6 is/are rejected.  
7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.  
8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.  
10) ☒ The drawing(s) filed on 26 November 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☒ All b) ☐ Some \* c) ☐ None of:  
1. ☒ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)  
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)  
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.  
4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.  
5) ☐ Notice of Informal Patent Application (PTO-152)  
6) ☐ Other: \_\_\_\_\_.

## **DETAILED ACTION**

### ***Claim Objections***

1. Claims 1-6 are objected to because of the following informalities: Some of the claims contain improper grammatical errors. For instance, claim 1, line 19 details "at least one of said computer workstations or said further computer workstation a task generator". It cannot be determined whether the task generator is on, associated, etc. in relation to the computer workstations. Appropriate correction is required. Applicant is also suggested to review the remaining the claims also.

### ***Claim Rejections - 35 USC § 103***

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over "A High Performance Computing Approach to the Registration of Medical Imaging Data" by WARFIELD et al. in view of "Load Distributing for Locally Distributed Systems" by SHIVARATRI et al.

As to claim 1, WARFIELD teaches a medical system architecture (cluster of symmetric multiprocessors) (abstract) comprising a plurality modalities for acquiring medical examination images (pg. 1, The Role of Registration in the Analysis of Medical Imaging Data, "Inpatient registration is used for the integration of scans of a patient

from multiple imaging modalities (such as PET, SPECT, CT and MRI); a plurality computer workstations (multiprocessors) respectively allocated to the modalities for processing the respective medical examination images therefrom (via distributing re-sampling and comparison operations across a cluster of symmetric multiprocessor; abstract) (pg. 7, "Each node executes an SMP implementation of re-sampling and then comparison on a subset of the data, and returns the comparison value to the main process."); a transmission device connected to the computer workstations for transmitting the medical examination images (via distributing re-sampling and comparison operations across a cluster of symmetric multiprocessor; abstract) (pg. 7, "Each node executes an SMP implementation of re-sampling and then comparison on a subset of the data, and returns the comparison value to the main process."); a memory connected to the transmission device for storing the medical examination images (via the central storing of a workpile) (pg. 7, "A parallelization strategy suitable for this environment is the workpile strategy. One process manages a workpile managing access to the units of work and collating partial results, while other processes request work units and carry out the work independently. This allows both slow nodes and fast nodes to maximize the amount of work they do because it does not impose arbitrary synchronization points on the work. It also dynamically reacts to changes at the rate at which certain nodes can process jobs. "); wherein each of the workstations (processor / node) contain a work list management unit in which a work list (work units) listing task (computations) to be performed by that workstation is stored (pg. 7, "A parallelization strategy suitable for this environment is the workpile strategy. One process manages a

workpile managing access to the units of work and collating partial results, while other processes request work units and carry out the work independently. This allows both slow nodes and fast nodes to maximize the amount of work they do because it does not impose arbitrary synchronization points on the work. It also dynamically reacts to changes at the rate at which certain nodes can process jobs. “) wherein the cluster dynamically reacts to changes at the rate at which certain nodes can process jobs (pg. 7). However, Warfield does not teach a detector that determines and emits a detector output signal representing usage of the workstation dependent on a stored work list.

SHIVARATRI teaches a distributed load balancing scheme in any node system wherein all nodes uses information, i.e. state, acquired from other nodes during polling classify the other nodes as overloaded, underloaded, or OK nodes such that when the current node has a CPU queue length that is in violation with one of the thresholds the nodes transfers part of its load to another node (pg. 38-39, A stable symmetrically initiated adaptive algorithm). The work performed by SHIVARATRI would obvious be image processing functions. WARFIELD teaches that the image processing environment dynamically reacts to changes at which certain nodes can process jobs wherein the jobs perform image processing functions. It would be obvious to one of ordinary skill in the art that the teachings of WARFIELD when combined with the teachings of SHIVARARTRI would distribute work, i.e. the calculations of medical images from one processor to another processor based on the classified information of the processor as either overloaded, underloaded, or OK. Therefore, the combination would teach all of the workstations (processors / nodes) emitting a detector output signal

representing usage of that workstation (i.e. its load / state) and a task generator associated with the receiving workstation (node receiving state / load) evaluating the usage indication in order to balancing the work from or to the node. Therefore, it would be obvious to one skilled in the art to combine the teachings of WARFIELD with the teachings of SHIVARATRI in order to facilitate improved load sharing abilities at low system loads, and high loads while not causing system instability (pg. 43, Stable load-sharing algorithms).

As to claims 2-4, SHIVARATRI teaches comparing the number of pending tasks to a threshold value and generating a signal (state information) to another node if the pending tasks (queue of work / queue length) falls below or exceeds a threshold (pg. 39, Transfer policy).

As to claim 5, WARFIELD teaches a server (master process managing the workpile) forwarding the images to respective workstations among the computer workstations (pg. 7, "We use a dynamic load balancing (self scheduling parallelization..."). SHIVARATRI teaches that a process manages its work in order to distribute it to other nodes if it is overloaded (pg. 38-39). It would be obvious that the node distributing its work is the server.

As to claim 6, reference is made to a method that corresponds to the system of claims 1-5 and is therefore met by the rejection of claims 1-5 above.

***Response to Arguments***

4. Applicant's arguments with respect to claims 1-6 have been considered but are moot in view of the new ground(s) of rejection.

***Conclusion***

5. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

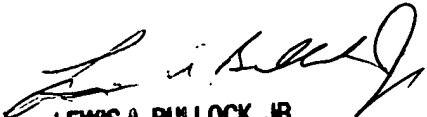
A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lewis A. Bullock, Jr. whose telephone number is (571) 272-3759. The examiner can normally be reached on Monday-Friday, 8:30 a.m. - 5:00 p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Meng An can be reached on (571) 272-3756. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

January 9, 2006



LEWIS A. BULLOCK, JR.  
PRIMARY EXAMINER